Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications	)	PS Docket No. 11-153
	)	
	)	
Framework for Next Generation 911 Deployment	)	PS Docket No. 10-255
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COMMENTS OF L.R. KIMBALL

L.R. Kimball, a CDI Company, of Ebensburg, Pennsylvania hereby submits comments in response to the Federal Communications Commission's (Commission) *Proposed Rule* published in the Federal Register on October 12, 2011, in the above captioned proceeding.

L.R. Kimball is one of the nation's largest engineering/architecture/consulting firms, annually ranked among the top 200 design firms and the top 20 telecommunications firms by Engineering News Record. L.R. Kimball's Communications Technology Division has offered public safety and mission critical consulting services for more than 15 years. Our communications technology practice is focused on all facets of public safety, supporting operations and technologies; 911 networking, call delivery and call handling; radio communications; cyber security; and public policy.

COMMENTS

L.R. Kimball commends the Commission on initiating this comprehensive proceeding to accelerate the development and deployment of Next Generation 911 (NG911) technology, which will enable the public to send emergency communications to 911 Public Safety Answering

Points (PSAPs) via text, photos, videos, and data and enhance the information available to PSAPs and first responders for assessing and responding to emergencies.

DISCUSSION

A. Facilitating the Short-Term Deployment of Text-to-911

1. Expected benefits of Text-to-911 Availability

The growth in the number of wireless devices has been almost unimaginable, but the growth in text messaging seems to be even higher. The 2011 industry statistics showed more than a 22% growth in text messaging.[1] Any parent with a teen or young adult will tell you that texting their children gets a much faster response than calling their cell phone. The speech and hearing impaired community has largely adopted text messaging as their primary means of communicating. There are many benefits of texting to 911 including:

1. Texting provides the ability for the speech and hearing impaired community to communicate with 911 directly and not be forced to use a third party relay service.

2. The silent nature of texting enables people to communicate with public safety discreetly when they are in danger.

3. Texting to 911provides populations that use text messaging as their primary means of communication with easy access to emergency services.

4. The access to text in the outer edges of coverage areas may allow people in need to get help without voice service.

Some have argued that text to 911 should not be implemented. Most of these arguments compare text to voice communications. L.R. Kimball believes that comparing text to voice is not valid. Texting should stand on its own or in the least be compared to teletypewriters (TTY), also

[1] The percentage was calculated using the Minutes and Messages in 12 Month Periods statistics from CTIA's 2011Semi-Annual Wireless Industry Survey. *Available at*, http://www.ctia.org/advocacy/index.cfm/AID/10316.

known as telecommunications devices for the deaf (TDD), since TTY/TDD is at least somewhat comparable.

2. *Ongoing Text-to-911 Trials*

L.R. Kimball understands the usefulness of conducting trials of SMS to 911. A number of SMS to 911 and other text to 911 trials are ongoing across the country. However, the lack of standardization in text to 911 and, specifically, SMS to 911 results in technically fragmented deployments.

This fragmentation will only exacerbate the issues surrounding the management of public expectations and training. The pressure for standards-based SMS to 911 is intense, and delay will only result in additional issues. Unfortunately, the publicity of the trials also causes public confusion. The information resulting from these trials is often misunderstood by mainstream media and the public.

One option to prevent these misunderstandings is to develop a separate test code to use for SMS to 911 trials like the early * or # codes used for wireless testing such as "*11", "#77" or "*HP." These coded calls went to a specific location but did not have the same level of expectations as a 911 call. Another option is the use of a short code similar to those used for marketing ringtones and information services. One possible code is "4357" which is "HELP" on the keypad.

3. *Approaches Based on SMS and Existing Infrastructure*

The two major arguments for not implementing SMS to 911in the existing architecture are reliability and location capability. Reliability is becoming less of an issue because

implementation choices can improve reliability beyond "best effort." It has been stated in previous reply comments to the Commission that SMS reliability is nearly the same as the reliability of a voice wireless call. [2]

The issue of location is more difficult to overcome; however, this should not delay the work towards getting this important service to the public and the PSAPs that are capable of receiving these communication methods.

The public should be encouraged to use communication methods, such as voice, that are more reliable and provide better information. However, SMS has such a high level of penetration in the public market that to ignore it does a disservice to the public and their safety.

Implementation of SMS in the interim should be accomplished in a progressive manner. SMS without detailed location or some form of SMS to voice may have to be in place for a short time similar to the phased deployment of wireless E911. Ensuring PSAPs have access to customer proprietary information (CPI) in a timely manner is critical. L.R. Kimball recommends that the Commission examine existing rules regarding CPI and expand them as necessary to include new technologies.

4. Approaches Based on Software Applications

Software applications that can integrate into the legacy 911 system should be the first choice in the short term to allow for more complete access. Software applications should be developed in a way that makes use of services currently in use at PSAPs. PSAPs have limited resources to deploy new technology due to the current economic climate. The development of applications that can integrate with the current 911 systems will allow for rapid and uniform deployment across PSAPs.

[2] Rave Mobile Safety's Reply Comments to the Notice of Inquiry in PS Docket 10-255 (March 15, 2011).

For example, there are commercially available applications that will allow a smart phone to send Baudot tones. This makes a smart phone emulate the TTY/TDD technology that is currently supported by the 911 system and used by PSAPs. It has been reported that not all smart phones are capable of allowing an application to control the phone portion of the device.

The use of application based solutions should be monitored to prevent multiple solutions that are not compatible or interoperable because the development of competing solutions will slow down the implementation of NG911. All application based solutions should conform to open standards. This may require regulatory action in order to ensure uniformity and interoperability.

B. 911 Prioritization in Major Emergencies

The issues of prioritization in major emergencies may not be in the best interest of the public. Legacy systems are built on provisioning dedicated circuits and have built in restrictions that the PSAPs have been able to base staffing and operational decisions around. L.R. Kimball does not see the legacy system changing at the PSAP.

NG911 or IP based systems would require additional devices to determine that a specific communication is a call to 911 and that would require additional devices and screening of all traffic in a system. This could slow the systems down on a normal basis, but in a major emergency it is just one more device that could be overloaded and potentially impair the public's ability to reach help.

C. Facilitating the Long-Term Deployment of NG911 Text and Multimedia Applications

1. Expected Benefits of Availability of NG911 Text and Multimedia Applications

Providing access to 911 via NG911 text applications will be instrumental in improving accessibility for the speech and hearing impaired community. As mentioned in the NPRM, this community prefers to communicate via text. The ability to contact 911 via text might eliminate some of the confusion regarding silent calls to 911, when the call should be queried to determine if it is a TTY call. In the past, this community has been hesitant to use a TTY to contact 911 directly. In addition, the ability to text 911 would prove beneficial in cases of kidnapping, domestic disputes, home break-ins, hostage situations or other incidents where the caller needs to contact 911 discreetly.

The Virginia Tech shooting is repeatedly used as an example of the need to text 911. Several the students attempted to text 911 or texted people outside of the school to contact 911.

2. Standards Development for NG911 Applications

Several standards developing organizations (SDOs) are working on standards for NG911. It is likely that there will be inconsistencies in the implementation of NG911 if inconsistent standards are developed.

The implementation of new NG911technology is the first opportunity that public safety has to design a purpose built system from the bottom up. The development of new and specific standards for NG911 is critical to maximize this opportunity. Maintaining current standards could keep voice and data on different paths and would ultimately impede the successful deployment of NG911 and all it has to offer.

Moving forward, all standards work should be monitored in order to ensure that all standards are developed with the best interest of public safety in mind. The public safety industry learned valuable lessons about the need for consistent standards when numerous radio system deployments were based on differing standards and resulted in systems that were not interoperable. In an effort to avoid issues of the past, the use of open standards is the key to deploying NG911.

Recent comments on the record for this docket state that the National Emergency Number Association (NENA) is not a standards body. L.R. Kimball disagrees with these statements. NENA, led by public safety practitioners, has developed many standards that have moved 911 forward in the last 30 years.

3. Approaches Based on IP-Based Messaging or Real-Time Text

L.R. Kimball believes a clear delineation of the boundary between call origination networks (text calls) and the Emergency Services IP Network (ESInet) is key to resolving numerous issues surrounding various text technologies and 911.

L.R. Kimball anticipates that ESInets will ultimately support or require a NENA i3 interface utilizing Real Time Text Protocol (T.140, RFCs 4103, 4504, 5194).

L.R. Kimball cannot anticipate the various text technologies that will be deployed long term by various call origination networks. We do anticipate that application layer gateway devices will be required to convert between emergency text calling networks and the ESInet. The texting networks are considering emergency calling requirements in their deployments, and should be aware of the NENA i3 / RTT interface. This should lead to text deployments that

reduce the issues that must be resolved in developing application layer gateway devices, if they are required.

These forms of messaging could also impact other PSAP equipment. Logging static messages is relatively easy, but RTT would need to be recorded by keystroke. For example, an assailant could take the victim's phone away while a victim was attempting to text 911 and backspace out of the message and text 911 that everything is O.K. Logging static messages would be difficult to use as evidence in court without a keystroke record.

4. Approaches Based on Software Applications

The long term use of application based solutions is certain. A potential issue will be that the open and free development of these applications may lead to interoperability issues. All applications should be developed based on a clear set of interconnection standards and should clearly define common data elements. For example, a new application cannot use a new identifier for street and expect to interconnect.

A process to define and use these data elements is needed. Making use of an existing system like the National Information Exchange Model (NIEM) is an option. By setting a baseline interconnection standard and a process to define data, the market forces will have the freedom to develop newer and better solutions.

D. The Commission's Role in Expediting Deployment of Text-to-911 and Other NG911 Applications

1. Incentive-Based vs. Regulatory Approaches

The Commission noted in the NPRM that 'wireless providers generally argue that the Commission should not adopt any text-related requirements at this time, but should wait until standards are adopted.'

L.R. Kimball disagrees. If the Commission had waited to adopt wireless location requirements until standards were adopted, we may still be waiting. That statement is admittedly hyperbolic, but we make it to illustrate the point. The record in the Commission's original wireless E911 proceeding includes comments from certain parties who, while supporting the goals of E911 for wireless subscribers, raised an argument concerning the lack of standards. The Commission noted the lack of standards, but nevertheless issued its ruling in 94-102. The Commission clearly saw its role in expediting the deployment of wireless E911, and took action. We think the Commission should adopt the same approach with regard to text to 911 and other NG911 applications.

One of the Commission's statutory mandates under the Communications Act is, "promoting safety of life and property through the use of wire and radio communication." [3] In our increasingly mobile society, consumers' use of wireless communication is evolving from voice-centric to text-centric. The Commission's statutory mandate is broad enough to apply to these changes.

The Commission asked whether there are any incentive-based approaches it could or should adopt to encourage the rapid development of text-to-911 solutions. There may be, but L.R. Kimball thinks a regulatory approach is necessary, just as it was for wireless E911.

[3] 47 U.S.C. 151

The Commission asked whether it should develop best practices for deploying text-to-911 and other multimedia applications, for example through a group like the Communications Security, Reliability and Interoperability Council (CSRIC). The careful membership balance of that group would be important to ensure that the public safety and public needs are put first. We think that would be a prudent use of the expertise the Commission has available to it and would help assure greater uniformity in deployment across the nation. The Commission asked whether, alternatively, it should adopt deadlines, timetables, or uniform network interface standard requirements. We do not see this as being an either/or proposition. The Commission could utilize CSRIC to develop best practices for deployment and at the same time adopt deadlines, timetables and uniform network interface standard requirements. For example, best practices for deployment undertaken by CSRIC could be akin to the type of guidance provided in OET Bulletin 71 for wireless deployments. Deadlines, timetables and uniform interface requirements are more clearly the sort of topics best addressed through a formal proceeding.

The Commission asked if providers have an incentive to rapidly develop NG911 solutions if the Commission does not impose such measures. This, in our view, is a different question from the previous ones relating to text-to-911 and multimedia applications. The parties put forth arguments during the early wireless proceedings to the effect that the Commission should let market forces dictate the deployment of E911 for wireless services. We are grateful that the Commission did not take this approach and so are the thousands of persons whose lives were saved. The most influential providers in the NG911 market are still largely the major telecommunications carriers, because of their vast infrastructures and strong lobby. We have observed the roadblocks to deployment many of these providers have put in the path of state and local governments that want to move forward with open standards for NG911. Therefore, we do

not think the providers have any incentive to move forward rapidly if the Commission does not act. Even if they were to move forward, it appears that the Incumbent Local Exchange Carriers' (ILEC) vision of NG911 is more of a change in network technology from legacy circuit-switching to IP than the true NG911 vision of public safety. This vision of NG911 is a nationwide interconnected and interoperable network of networks. Achieving this vision requires the Commission, at a minimum, to require standardized interfaces for network, equipment and application providers. The Commission should make clear the expectation that national public safety interests in a post-September 11th world requires a nationwide approach and that the provincialism that has historically prevailed must give way to a new world in which 911 voice, messaging and data communications can be transmitted and shared seamlessly across all levels of government while maintaining the local focus of public safety.

The Commission asked whether there were any actions it could take to act as a catalyst or facilitator for early operational prototypes. There are. Rather than reinventing the wheel, or duplicating initiatives already underway, we urge the Commission to engage with and support NENA's Industry Collaboration Events (ICE) initiative. ICE is actively testing the interoperability of various aspects of NG911 technologies and functions. The enhanced credibility this would give to this initiative would provide an incentive to the various vendors and telecomm providers to participate. It would also broaden the Commission's perspective beyond the entities it currently regulates, since equipment vendors and other service providers participate. The Commission could also fund pilot projects such as it has done with its Rural Health Care Pilot Program.

The Commission asked whether it should defer additional regulatory action until standards are more universally adopted. Our answer is no. Just as the Commission took

regulatory action prior to the formal adoption of wireless E911 standards, it should do so now. The Commission should consider reviewing the current definitions of 911 to determine where new media types are categorized, if at all. For example is text a wireless service? What does that mean for VoIP implementations of RTT? Broadening definitions to include more media types could assist with the removal of roadblocks at the state level.

The Commission asked what degree of flexibility it should afford to providers in their efforts to deploy NG911 solutions. The Commission should hasten to adopt open interface requirements for every aspect of NG911. If it does not do so, then we will end up with a balkanized patchwork of systems that cannot interoperate and will stymie the deployment of seamless nationwide emergency radio and emergency 911 communications – a problem that continues to plague public safety despite the billions of dollars devoted to it since September 11th.

The Commission asked which mobile devices and networks should be subject to requirements. The Commission should not set a future date. Its requirements should apply to all devices currently capable of accessing the Internet. Further, the Commission should clearly articulate the policy that all future devices and services that provide users with access to the public switched network or the internet must have the capability to provide access to the 911 system along with location information in a common format.

2. *PSAP-based Triggers for Providers to Provide NG911 Solutions for Non-Voice Emergency Messaging to 911*

The Commission asked if it should assess PSAP NG911 readiness at the state or regional level rather than the individual PSAP level. The concept of NG911 is not possible for an

individual PSAP to achieve. True, an individual PSAP could be IP-enabled, but that does not equate to being NG911 ready.

NG911 will provide enhanced services through system based solutions. Some of the threshold issues of NG911 will be at the PSAP, but also at the level of the system that serves the PSAP. Having NG911 capable equipment at a PSAP is needed, but having that equipment interconnected to a system that can deliver the calls and associated data is also needed. This results in a complex issue of readiness.

With regard to the question of whether readiness should be assessed at the state or regional level, we think that the framework the Commission puts in place needs to accommodate assessment of readiness at *both* the state and regional level. Furthermore, L.R. Kimball believes that coordination at the state level is important. The Commission could have each state determine the appropriate level of readiness for the state and then notify the Commission on how they plan to deploy; at a state level, regional level or other. This will allow for the states to develop systems where appropriate to ensure interoperability between regions. There are several reasons, based on how 911 actually works in the states, for why this is necessary.

First, in many cases, PSAPs within a particular region of a state will be capable of receiving NG911 information well before the majority of the state's PSAPs are ready. These situations include states without a state-level 911 agency (such as Alaska, Colorado and Mississippi) or states that have a state-level 911 agency that lacks statutory authority to coordinate deployments (such as Michigan, Georgia and Arizona). In these types of states, regions need to be able to move forward on their own with this caveat: these states *must* establish a mechanism to set statewide standards for interconnection between all the regional ESInets and then to make sure the interconnections actually happen.

Second, those PSAPs or regions whose service jurisdiction spans state boundaries, such as the MARC region in Kansas and Missouri, might have issues if one state has indicated the ability to receive this information while the adjoining state has not. This would put an undue burden on a regional PSAP that wanted to move forward but was being hampered by the inability of a state to move forward. Deployment of wireless 911 continues to be an issue of continuity statewide for those states that lack state-level authority to coordinate deployments. In such a situation, NG911 deployment capability could take many years.

Third, there are a number of states that provide 911 at the state level, i.e., the state itself is the contracting agent for a single statewide system (for example all six New England states and Delaware). In those instances, only the state can determine readiness.

L.R. Kimball recommends the Commission establish prerequisites, such as it did for wireless E911 implementation, which would trigger a provider's obligation to implement NG911. The region or state should be required to request text or media services from the provider for those PSAPs that are capable of receiving and utilizing the data.

L.R. Kimball agrees that each entity should demonstrate a threshold level of technical NG911 capability as a precondition to any obligation by providers to deliver text or other media to PSAPs. While it is understandable that not all entities will demonstrate the technical NG911 capability, some more advanced and forward thinking entities will establish the ability to receive the types of calls identified in this NPRM. The Commission has already identified this disparity among PSAPs in its comment:

> *With over 6,800 PSAPs in the United States, spanning a wide range of sizes and resources, individual PSAPs are likely to have highly varying timetables for developing*

the technical and operational capability to handle incoming texts in the short term, as well as texts and other media in the longer term implementation of NG911.[4]

The Commission should establish a methodology to identify these specific entities in a similar manner as the emergency medical system identifies medical facilities by trauma levels. For example, a PSAP with legacy technology would be identified as a level 3 PSAP. Those PSAPs identified with basic IP connectivity that do not wish to expand their capability would be classified as a level 2 PSAP. Finally, those PSAPs with full NG911 IP capability would be classified as a level 1 PSAP. The Commission should, through a rulemaking, establish the requirements for and registration classifications of PSAPs (similar to the manner in which primary and secondary PSAPs are identified) and therefore, better identify a specific area that has the technical ability to receive these types of calls. When a level 3 PSAP is identified and requests service, the providers should be obligated to provide the necessary services identified in this NPRM. However, it should not be necessary for all PSAPs in a region or state to be included in the request for it to be considered a valid request.

The Commission should establish the requirements for the request which would be universally accepted. L.R. Kimball recommends that the request should include language to demonstrate connection to an ESInet with appropriate functions to route and deliver these calls; and the ability to receive and utilize the data. This could include information on how this information is relayed to the responders or the appropriate dispatch entity.

As part of establishing these thresholds, L.R. Kimball recommends that the NENA's definition of NG911 be adopted. NENA defines NG911 as, *"the establishment an IP-based system comprised of managed IP-based networks (ESInets)."* [5] Specifically the functions

[4] FEDERAL COMMUNICATIONS COMMISSION. 47 CFR Part 1 [PS Docket No. 11–153; PS Docket No. 10–255; FCC 11–134]

[5] http://www.nena.org/sites/default/files/NG9-1-1%20Definition%20Final%201.1.pdf

defined in the NENA i3 documents and the open architecture they are based on should be adopted to prevent multiple systems that are not interoperable.

E. Consumer Education and Disclosure Mechanisms

1. Expected Benefits

Public information campaigns will play the same important role in the transition to NG911 as they did during the transitions to E911 and wireless E911. There is an expectation that the 911 system will work everywhere, every time. Public education campaigns are essential in helping to set expectations by making the public aware of the differences in 911 service levels for different communications devices and technologies. However, public education campaigns have limitations in that they are not able to reach all users. It will be important to have assistance from the media to ensure accurate information is available to the public. Making the public aware of the differing capabilities of different technologies allows them to make a more informed decision on how to contact 911 in the event of an emergency. It also provides consumer pressure on the industry to work towards a long term solution. Because the level of public awareness with regard to the capabilities of communication technology preferences is such a serious public safety matter, it is L.R. Kimball's opinion that such campaigns should include a means to measure their effectiveness and to adjust if the message is not getting across to the target audiences.

2. Approaches for Education and Disclosure

L.R. Kimball recommends multiple approaches for education and disclosure. Service providers should, at a minimum, provide a response to all 911 messages, regardless of technology, alerting the sender that the message did not go through (some carriers already

provide this). In addition, much like wireless and VoIP providers were required to do; information on contacting 911 via text and media should be distributed by the carriers when devices are purchased and in monthly bills.

The Public Education and Training subcommittee within NENA is currently working to address these issues that include messaging for the public as well as training for 911 call takers. The Commission should work through the 911: The Number to Know National Educational Campaign (www.know911.org) to craft a uniform public education campaign. This allows the campaign to be sponsored at the Federal level and allow local governments to modify it for their regions.

Finally, the Commission should investigate creating an online tool, such as the consumer focused map as mentioned in the NPRM, which would allow a citizen to easily determine if NG911services are available in their area.

F. Overlaps with CVAA and EAAC

The Americans with Disabilities Act (ADA) requires people with disabilities to have direct, equal access to PSAPs. L.R. Kimball recognizes that the development of common text-to-911 and multimedia-to-911 solutions would benefit disabled communities as well as non-disabled communities. However, L.R. Kimball believes that there are instances where disabled communities might require more specialized technology to meet their accessibility needs.

For example, loss of hearing is common as people age. This hearing impaired community constitutes a major demographic group that is accustomed to legacy telecommunications technologies. It is unlikely that this community will be inclined toward text messaging as their

sole means of gaining access to 911. They will be more inclined to use TTY/TDDs [6] or hearing/voice carry over. Therefore, it is L.R. Kimball's opinion that these technologies must continue to be available. The solution that will work for one will not be appropriate for another, therefore traditional access modes must continue to remain available to the speech and hearing impaired community.

Additionally, L.R. Kimball believes the Commission should explore the development of additional technologies for the blind and deaf/blind community. The text-to-911 and multimedia-to-911 solutions discussed in the NPRM may not be sufficient to provide access to this community. Utilizing and improving technologies such as TelleBraille, NexTalk and large display TTY will be necessary in connecting the blind and deaf/blind communities to 911.

Being that the EAAC deals exclusively with 911 and NG911, L.R. Kimball believes that it makes sense to combine the proceedings to explore the topic more holistically. Additionally, the combination of documents eliminates redundancy and inconsistencies.

[6] Americans with Disabilities Act Access for 9-1-1 and Telephone Emergency Services. http://www.ada.gov/911ta.htm